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Prevention

EXERCISE PULSE PRESSURE AMPLIFICATION IS AN INDEPENDENT DETERMINANT OF LEFT VENTRICULAR DIASTOLIC DYSFUNCTION IN SUBJECTS WITH AN EXAGGERATED PERIPHERAL BLOOD PRESSURE RESPONSE TO EXERCISE

ACC Moderated Poster Contributions

McCormick Place South, Hall A

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Session Title: Stiff Hearts and Stiff Vessels: The Hypertensive Patient

Abstract Category: 7. Prevention: Hypertension

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Authors: *Chi Young Shim, Woo-In Yang, Sungha Park, Donghoon Choi, Hyuck-Jae Chang, Namsik Chung, Jong-Won Ha, Yonsei University College of Medicine, Seoul, South Korea*

Background: It is still controversial whether exaggerated blood pressure response (EBPR) to exercise is related to left ventricular (LV) remodeling and diastolic dysfunction. We hypothesized that subjects who have relatively higher central pressures, presented as lower pulse pressure (PP) amplification, would have LV remodeling and diastolic dysfunction among the subjects with EBPR to exercise.

Methods: Two-dimensional and Doppler echocardiography was performed in 53 normotensives (20 males, age 58 yrs) with EBPR to exercise (defined as difference of peak exercise and baseline systolic BP ≥ 60 mmHg in men and ≥ 50 mmHg in women) and 53 age, sex-matched controls with normal BP reactivity. Central hemodynamics were obtained at rest and immediately after peak exercise using pulse wave analysis. Subjects with EBPR to exercise were divided into two subgroups according to the median value of PP amplification (peripheral PP/central PP): Group I (n=26), higher PP amplification; Group II (n=27), lower PP amplification

Results: Group II revealed higher relative wall thickness, lower early diastolic mitral annular velocity ($E' 6.2 \pm 1.6$ vs 7.6 ± 2.6) and higher the ratio of mitral inflow and annular velocities ($E/E' 11.4 \pm 3.7$) compared with Group I (9.8 ± 3.9) and controls (9.7 ± 3.3). PP amplification at peak exercise showed significant correlations with relative wall thickness ($r = -0.27$, $p = 0.049$), E' ($r = 0.34$, $p = 0.013$) and E/E' ($r = -0.28$, $p = 0.042$) in subjects with EBPR to exercise. Multiple regression analysis showed that PP amplification at peak exercise was an independent determinant of E' ($\beta = 0.42$, $p = 0.031$), even after adjusting confounding variables.

Conclusion: Among the subjects with EBPR to exercise in peripheral, exercise response of central hemodynamics was diverse. Reduced PP amplification was significantly related to LV remodeling and diastolic dysfunction. Therefore, the assessment of central hemodynamics during exercise would be useful for risk stratification for LV remodeling and diastolic dysfunction.